AMERICAN ELECTRO-PLATERS SOCIETY

(An Educational Society)

Chartered 1909

MONTHLY REVIEW

DECEMBER, 1916

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The Review sincerely wishes all its readers a happy, bright, prosperous New Year.

MONTHLY REVIEW

Published by the

American Electro-Platers' Society

Editors' Office, 6230 Berthold Ave., St. Louis, Mo.

Vol. 3 DECEMBFR No. 12

EDITORIAL.

FROM THE WILD AND WOOLLY WEST.

By E. W. Heil, Wichita, Kansas.

The thoughts expressed by the different members of the A. E. S. from the north, south and east have been conveyed through the medium of the Monthly Review to member in the far west who now desires to return the compliment and say a few words not of a technical nature.

There appeared in the September issue of the Monthly Review a paper read at Cleveland convention in interest of the distant members of our Society. The writer, Mr. George B. Hogaboom, contended that the isolated plater was being neglected and seemed to deplore the fact that something had not been done sooner. Being a very distant and isolated plater, the writer feels at liberty to say a few words from another point of view, lest any member feel that the past years of our organization have not been satisfactory to one so situated.

The Society had arrived at the point where it fully realized the need and importance of a systematic plan of instructions such as was outlined by Mr. Hogaboom and the Bureau of Education was formed at the Cleveland convention. This bureau, with Mr. Hogaboom as chairman, will in course of time present and put into practice a plan of instructions designed to meet the requirements of plater desiring a more detailed study of the fundamental principles of electro plating.

While this will require time to accomplish and it may seem to some that the Society has been a long time arriving at this place, yet in the opinion of the writer the time is far from wasted. When the A. E. S. was first organized the purpose was to form an educational society. The organization might be likened to a great school in which all of the members were at the same time students and instructors and were without an outlined plan of instruction.

Is it strange that this Society in its infancy and composed of members, many of whom never see each other, should require a few years to perfect a course of instructions whereby the isolated plater may be benefited? The Bureau of Education is needed and will be of great value to the Society, yet the Society has been of inestimable value to the distant plater in the past and will be more so in the future.

On the editorial page of the November issue of Monthly Review the writer noticed his name in connection with the names of several men of high standing in our Society, with the explanation that same would compose the editorial staff of the Review. This being news to the writer, it required additional confirmation from the editor and chief to verify it and learn if the appointment carried with it the liberty to use the pronoun "we."

A letter from Mr. Richards filled our heart with sensations of unutterable joy, marred only by the knowledge that "we" are not a good pool player. Much as we value the esteem of our worthy editor we are afraid we cannot gain favor in his estimation in this respect. We are too old to learn and our wife says that a good pool or billiard player is evidence of a lot of wasted time.

We might point out that some of our brainiest men are good pool players. We could instance Col. Hansjosten. You played very well that night, E. W. It must always be borne in mind that if a cue ball is hit too low it will jump.—Ed.

REMEMBRANCES.

By The Editor.

I remember, I remember,
The time I started plating;
The batteries we had to use,
The time each week we had to lose
Those zincs amalgamating.

I remember, I remember,
The series wound machine.
A series most profoundly cussed,
Of sparks and heat and copper dust,
And everything that's mean.

I remember, I remember,
That leather covered wheel;
Iron centered wheels made out of wood,
That jumped unless they balanced good,
With face as hard as steel.

I remember, I remember,
That Turkish emery;
Its absence surely makes us sore,
Those Turks should quit a spilling gore,
And quarry emery once more,
In that we all agree.

The services of a man with some experience in electro plating for the position of salesman are sought by the United States Electro Galvanizing Co. of 1-9 Park avenue, Brooklyn, N. Y.

METAL CYANIDE FORMULAS.

By R. SUMAN, Dayton Branch.

The metal cyanides are a somewhat new plating material to most platers, and few, if any, know how to handle metal cyanides to get the best results.

I don't claim to know; but by the following experiments in a practical way I may get some one to thinking and if we all try out some solution along the same line, we may develop a standard solution—not for all classes of work, but a standard for the particular class of work we are doing. The following are nothing more than experiments to see different actions of different amounts of chemicals added to metal cyanides.

Before explaining the foregoing article, I would like to impress on you that the formula or formulas and ways of handling may not be practical on anything other than ribbon plating; but will say it has been and is practical on this class of work and has been tried out to such an extent as to use up all of 72 gallons of solution on each solution mentioned.

The object was also to use up or to run out all chemicals at the same time, so one could make up a stock solution and leave the plating entirely to the inexperienced help such as one has in the plating room.

The formulas mentioned have been tried out on ribbon zinc which comes in rolls in about 5 lb. per roll or about 425 ft. per roll and from ½-inch to 4 inches wide and from .04 to .10 of an inch thick. It comes fairly clean, so there is not much trouble in cleaning it.

The machine is somewhat complicated and cannot be explained exactly, only by a drawing; but we don't care so much about the mechanical part but more on the practical plating point. However, the plating tank is made of boiler iron 12x12x96 inches long, used hot. Then the ribbon is run through cold running water, then in sawdust and rolled up. After that it is lacquered in an oven 3x3x10 feet long, heated to about 80°.

The solution I tried out first:

8 oz. caustic soda.
8 oz. soda ash.
2 oz. silicate soda.
1 oz. copper cyanide.
1 oz. sodium cyanide.
1 gal. water.

This solution didn't seem to get enough metal on in the required time. The plate seemed all right—smooth and bright, but thin.

Second solution:

3 oz. sodium cyanide.
3 oz. copper cyanide.
2 oz. soda ash.
1 oz. zinc cyanide.
½ oz. hypo soda.

This worked fairly good but somewhat dark color on account of hypo added. The plate very even and fast deposit.

Third solution:

6¼ oz. sodium cyanide.
6¼ oz. copper cyanide.
3 oz. soda ash.
4 oz. caustic soda.
2 oz. zinc cyanide.

This worked very good, only hadn't the right color, as I wanted between a bronze and brass color; but the plate was fast and bright and even deposit.

Fourth solution:

6¼ oz. sodium cyanide.
6¼ oz. copper cyanide.
2 oz. soda ash.
4 oz. caustic soda.
3¼ oz. zinc cyanide.

This worked very good until I had about 30 gal. used, then it didn't plate at all. I tried it out on hydrometer and it stood 26. I reduced it down to 16 and it plated dark red, something like the red sulphide of copper solution, and was very soft—didn't peel or blister, but soft. So boiled it very hard and got a good plate but still very red. Added some zinc cyanide but no change, so added soda ash about 1 oz. per gallon and the plate came out all O. K. and the color I wanted. This showed to me I had to use soda ash in connection, so tried again.

Fifth solution:

6¼ oz. sodium cyanide.
6¼ oz. copper cyanide.
3¼ oz. zinc cyanide.
3¼ oz. caustic soda.
3¼ oz. soda ash.

This solution seemed to work all right. The anodes seem to give up the metal very good and the color is uniform, also between a brass and bronze. So far this formula has given full satisfaction.

Another point is, you must boil these solutions to get good results, for you get very little plate, if any, if not boiled. Also your color comes out better if your solution is boiling.

Another point: By adding from your stock solution, your plating solution gets very dense, say 20 or 25 on hydrometer. This must be reduced to about 15 or 16 for good results. Another thing, you may have metal content and solution in good shape but no plate, if solution is not boiling.

Running ribbon through in this way means one foot (1 ft.) of ribbon plated in two (2) seconds, both sides, with 10 grains of plate per foot; or about 16,200 ft. per 9 hrs.

The reason for adding soda ash is for cleaning purposes. Caustic soda is added for cleaning and conducting purposes. These two (2) chemicals seem to act a great deal in bringing up the color. The more caustic soda added the more violent the action and the

more zinc deposited, which makes a difference in color.

Soda ash seems to make the solution more dense, which makes a somewhat slower plate, also a finer deposit. It acts somewhat like glucose does in acid copper solutions; it also helps in cleaning properties.

By adding these two (2) chemicals in excess you find it takes more current to operate or to force your plate on. And if you are not careful in a still solution your hooks or stringing wires will burn off and your work go to the bottom of the tank. For ribbon plating it seems to do no harm, only it is a waste of chemicals. I thought I would mention it in case someone might want to add an excess and get in trouble.

These solutions can be used cold, but the color varies; by using an agitated solution your color comes fairly good and a fast deposit is obtained. I might mention by using the last formula and using it boiling, it can be used for a still solution and get a plate in five (5) minutes which is equal to a 20 or 30-minute plate in the old carbonate solution.

A black can be made from the last formula by adding 2 oz. of hyposulphide of soda per gallon solution. The plate is similar to the arsenic plate and comes out with a smut for relief work and looks very good when lacquered. It also makes a very good French gray by scratch brushing. Any member has the privilege to criticize this article, as I don't think I have covered all of it, but by writing to me personally or publishing your criticism in our Monthly Review we may be able to thrash out something more in metal cyanides.

GOOD FELLOWSHIP.

Good fellowship and human live rule the world. War, the conqueror, finally meets its own conqueror. Non-resistance, the returning of good for evil, will triumph over force and violence. The battle songs will die, and hymns of quiet peace will rise. The brute in us will grow more feeble and the man in us will grow stronger with the vanishing of the years. The gospel of good fellowship will not have been in vain.

Good fellowship gives, never exacts. It never serves, never enslaves; it does only good, asking no return. It seeks to bless its objects, and as a result gains its own reward in unadulterated happiness. It denies not itself; it flows out in one unbroken stream to us all; it is good will; it is comradeship; it rejoices in the prosperity and well being of others; it gladdens the hearts of the members and lightens the burdens of the officers. It is innocent, trusting and joyous; it is good cheer in the heart, laughter on the lips and sunshine in the life. It wearies not in well doing and encourages its continuance.

It is a diffusive and all-pervading as light, as imperceptible as life-giving, as all-conquering.

Good fellowship is our law of life, the battlement of our defense, the goal of our ambitions.

Let good fellowship reign supreme.

MORE ABOUT PITTING.

Read at the Chicago Smoker

By F. J. Liscomb, Chicago Branch.

The A. E. S. convention for 1916 has become a matter of history, much valuable data has been added to our files. The stenographer, being unfamiliar with the members' names, misspelled many, and not being a plater he misinterpreted some of the statements, notwithstanding, however, this by paying close attention to the Review one will be able to get the meat of the nut.

The subject of pitting was up for its share of discussion, and much in the way of valuable suggestions came out, these if followed should diminish the amount of pitting in the future. It has been said "Many men, many minds," and with the many minds of the A. E. S. at work on the problem, we must eventually solve this, as well as many other knotty problems.

This is the first time that the discussion of the papers has been published in the Review. It is a step in the right direction, as many of the discussions contained as much and sometimes more information than the article that caused them. The thought occurs to me that a review of what came before the convention on the subject of pitting of nickel deposits, together with a few facts that have come to my attention since the convention, might still further aid in overcoming the capital defect in the methods of nickel plating.

Our friend, of whom Mr. H. J. Hawkins spoke, has since found that his "glucose nickel solution" blew up at a time that was inopportune, so that glucose in a nickel solution needs further investigation before it can be classed as the cure.

Acting along the line of thought suggested by the remarks of Mr. Reeves, which were to the effect that perhaps the addition of glucose to the solution caused a decrease in the conductivity of the liquid, and thereby cut off a portion of the current, reducing the amount of metal deposited. Not having a nickel solution at hand, I added twelve ounces (av.) of glucose to five gallons of acid copper solution, and measured the electrical resistance of the bath before and after the addition, the difference, if any, was so slight that it is believed to be immaterial.

Mr. Ter Doest cited the fact that he had had pitting at a high voltage, but was able to overcome the defect by reducing the voltage and consequently the amperes.

Mr. Servis also found it necessary to reduce the voltage in order to avoid pitting however, I have since been informed by him that he has changed the solution and can now use the higher voltage, but that is his thunder, and it will be left for him to relate.

Mr. Shepard mentioned a film of gas that adheres to the surface of the work even after passing the same through several dips.

Mr. Wright's remarks coincided with Mr. Shepard's, and from here it looks as though they had brought to light a possible cause of pitting; it would make little difference if the microscopic bubbles by hydrogen gas caused by the metallic articles coming in contact with the acid dips, or, bubbles of air adhering to the articles, the air coming from the water in which air is dissolved. If this be so,

then the rinse water should be boiled to remove the air; this would be an impossible task.

Agitation by air has been known to cause pitting on the underside of a spherical float on which a heavy deposit of copper was being placed while the sphere was rotating rapidly; the air was shut off and the pitting ceased.

It is worthy of note that some platers resort to sponging their work just before going to the plating bath, and in this way avoid pitting to some degree. By sponging they remove the hydrogen or air bubbles.

One of the real reasons why we have more pitting now than we used to have is because we are trying to cut down the cost of polishing by trying to do with two and three wheels work that should be done with four or five wheels, then depending on a heavy deposit of nickel to fill up the scratches to such an extent that when the articles are buffed a finish is had. In the event that all of the gray does not buff out, and the work is returned to the buffer, he complains that "there is not enough nickel on." The result is that we have been depositing more metal from time to time on the buffers account until now in some factories they deposit from two to three one-thousandths of an inch of metal, where one-thousandth should suffice. The heavier the deposit the greater the liability of pitting.

Being recently called upon to cure a bad case of this trouble, it was discovered that in the tanks the plater was using nearly two hundred amperes and running the work for two and one-half hours, the work was badly marked. It was suggested that they reduce the current to one hundred amperes and cut the time down to one and one-half hours. This was done, the result was that the work was satisfactory in the main but the buffer claimed that he could not buff out all of the scratches. This was true, so now the polisher does it, and the pitting has stopped.

It was also noted that when the cathode with the heavy current was agitated with the hand, as suggested by Mr. Aufderheide, that a large volume of gas came to the surface of the solution, much of this gas was no doubt held on the lower side of the articles and could not rise, and was the cause of some of the trouble.

In the light of the facts that came out at the 1916 convention, it appears that if we must use the dense solutions and heavy current and at the same time avoid pitting, that a reduction of the thickness of the deposit would aid materially.

The chemical construction of the bath is important. Boric acid seems to be essential to the so-called high power nickel solution, in which single salts are used. The authorities are not a unit on the position it occupies or the part it takes. It has been said that it acts simply as a weak aid and causes the solution to have a slight acid reaction.

It has been noticed that the presence of boric acid in a nickel solution seems to prevent the quantity of hydrogen gas liberated during electrolysis. If this is so, there must be a chemical reaction

that destroys the boric acid or at least changes it so that a reliable method for testing the quantity of boric acid is needed.

Several times since the convention I have been taken to task for making the statement that nickel is magnetic.

That it is magnetic can be easily proved by a magnet and a small quantity of grain nickel.

A photo will be passed around showing grain nickel 99% purity being attracted to a magnet.

BLACK NICKEL FINISH.

By J. De Mars, Newark Branch.

Have your tank set up in the proper place, fill it within 4 inches of the top with clean, cold water. Now take 40 lbs. double nickel salts and place them into the water in tank. Allow the salts to dissolve in the cold water. Keep the salts always near the top, as in this way it dissolves more thoroughly and faster. When the nickel salt is all dissolved, take 6 lbs. sulpho-cyanide of potassium and dissolve same in some of the solution. When it is thoroughly dissolved add it to the solution and stir well. Next take 1 lb. sulphate of zinc and dissolve thoroughly in cold water and add to the solution. Stir well. This completes the bath. The formula of which is 1 gal. water, 10 oz. double nickel salts, 1½ oz. sulpho-cyanide of potassium, ¼ oz. sulphate of zinc.

Now put in nickel anodes. It is better to use anodes which have been in use and have the scale worked off. Clean them before putting in. There should be enough anodes to just about fill both sides, or in other words, just the same as in doing white nickeling.

Have tank fitted with volt meter and with a rheostat of sufficient resistance to allow of getting the voltage down to ½ volt with work in tank.

Prepare your work in the usual manner and run for 15 or 20 minutes in the white nickel, then transfer to the black nickel and run at ½ volt for 1 hour. Then increase the voltage to about ¾ or ⅘ volts and run at this voltage for ½ hour. The work should then be ready to take out.

Take work out, rinse in clean, cold water and plunge quickly into clear, cold muriatic acid. If the acid is too strong and produces irridescent colors upon the work, add a small quantity of water. Rinse the work in cold water and then into warm water and dry in clean sawdu-t, or it is sometimes better to swing the work dry, as in this way it is not so liable to become scratched. This work should be lacquered as the lacquer improves the appearance and lasting qualities of the finish.

In maintaining the bath, if it becomes weak in metal, nickel may be added in the same manner as originally, and if the color is not deep enough a small quantity of the sulpho-cyanide and zinc may be added as before. In replenishing the bath never use more than ¼ oz. to the gallon of either the sulpho-cyanide or sulphate of zinc.

MAKING ELECTROTYPE DIES.

By F. H. NORDMAN, Cincinnati Branch.

At one of our late meetings I have been requested to detail my method of making electrotype dies. My firm still finds considerable use of the electrotype dies for stamping engraved designs on such articles as bread trays, toilet-ware, etc.

These dies as you realize are made from a master plate. This original plate, of course, can be used time and again. The best metal to use for this purpose is a fairly heavy piece of Britannia metal, because it is easy to engrave and if fairly heavy will retain its shape. When the plate is being engraved it is very important that the engraver be sure not to undercut the design in any way, for to do so would mean that the model or master plate will be destroyed when you go to part it from the deposited copper.

After being engraved the plate is ready to be fitted with a suitable hook to suspend it in the solution. It is then given a fair silver plate. It need not be very heavy but if heavy enough it can be used a second time without being resilvered.

After silver-plating the model it is scratch brushed, or it can be colored on a buff. If it is going to be colored on a buff it means that the model should be cut down thoroughly before the design is engraved on it without the designer losing some of the finer details of the design. After the silvering operation it is ready to be treated so as to insure easy parting of the two plates, while graphite can be used as a parting. I prefer to use iodine dissolved in alcohol. This covers the face of the plate with a film of silver iodide, giving a slight brownish color. Right here it is well to paint the back of the model with a coating of bee's wax or some other suitable stop off to prevent plating the back and also to paint a border or frame around the edge of the plate to prevent the deposited copper from creeping over the edge and causing it to bind there.

It is now ready to place in the copper sulphate or duplex solution. Just a word regarding the copper solution. In making the solution I dissolve copper sulphate till the solution stands 17° or 18° Beaume, and add sufficient sulphuric acid to bring it to 21° Beaume.

In my experience I have found no difficulty in a solution standing as high as 24° Beaume. I believe it is a question of keeping it balanced more than anything else. The bath is agitated by air pressure. Instead of having a lead pipe in the solution, I have a hard rubber tube with a branch for each side of the tank, it being a five-rod tank. The agitation should be between the anode and cathode. Having neither a volt nor ammeter on the tank I cannot say just what voltage or ampherage.

After the deposit is heavy enough, say almost ¼-inch thick, the deposited copper plate is removed from the master plate. If there are no undercuts on the model you will experience no difficulty in parting the two plates.

A very small wedge under the edge between the two plates will cause them to part. The model after parting should be thoroughly

cleaned; the bee's wax or stop off removed and placed away for future use.

The die is now filed to a nice smooth surface on the back and soldered to a steel plate, after which it is ready for the hydraulic press.

My Dear Mr. Richards:

In reading the discussion in the Review on Mr. Reeves' paper on soap solutions, I noted my promise to supply the formula for the soap solution in use in our plant.

2 oz. chipped laundry soap.
1¼ oz. soda ash, or
1 oz. causticised soda.
⅔ oz. silicate soda.
1 gal. water.

This formula will have to be varied according to the kind of soap used. The neutral soaps give the best results. If the water contains lime or magnesia it should be "broken" with caustis lye, about ½ to 1 oz. per gallon.

Yours very truly,
WALTER FRAINE,
Sec'y-Treas., A. E. S.

THE WELCOME MAN.

There's a man in the world who is never turned down, wherever he chances to stray; he gets the glad hand in the populous town, or out where the farmers make hay; he's greeted with pleasure on deserts of sands, and deep in the aisles of the woods; wherever he goes there's the welcoming hand—he's

The Man Who Delivers the Goods.

The failures of life sit around and complain; the gods haven't treated them white; they've lost their umbrellas whenever there's rain, and they haven't their lanterns at night; men tire of the failures who fill with their sighs the air of their own neighborhoods; there's a man who is greeted with love-lighted eyes—he's

The Man Who Delivers the Goods.

One fellow is lazy, and watches the clock, and waits for the whistle to blow; and one has a hammer, with which he will knock, and one tells a story of woe; and one, if requested to travel a mile, will measure the perches and roods; but one does his stunt with a whistle or smile—he's

The Man Who Delivers the Goods.

One man is afraid that he'll labor too hard—the world isn't yearning for such; and one man is ever alert, on his guard, lest he put in a minute too much; and one has a grouch or a temper that's bad, and one is a creature of moods; so it's hey for the joyous and rollicking lad—for

The One Who Delivers the Goods!
—Walt Mason.

MY EXPERIENCE WITH TRADE NAMED ELECTRIC CLEANERS.

By Joseph Walters, Richmond, Va., New York Branch

In July, 1915, I had installed a three-hundred gallon tank for electric cleaning, my firm having received a barrel containing 225 lbs. of a cleaning compound at 3½c a pound, with the following instructions for its use:

"To every gallon of water add one-half pound of the ——— Cleaner." The addition of forty pounds of cleaner compound per day was recommended, and a new solution made up every six weeks. To have followed directions, the cost would have been for one year: Eight new solutions at $6.00 each (freight and drayage added), $48.00. Adding forty pounds per day on an estimated basis of 288 working days to the year would total 11,520 lbs., at 3½c per lb. would amount to $403.20, making the total cost $451.20 per year. Not only was the cost greater than by my former method of cleaning and scouring, but I had considerable difficulties in peeling and stripping of a great number of pieces of work, averaging from ten to fifteen pieces a day, due, I believe, to the fact that "secret and mysterious" mixtures of unnecessary and inactive ingredients being deposited on the cathodes during electrolysis.

Two of the causes that disturbed by "peace of mind" with prepared electric cleaning salts were, first, its high cost in comparison to what it contains and what it can do; secondly, to make it come within a reasonable cost of cleaning, it would have to be used considerably weaker, but if made weaker, it did not clean. To make it do the cleaning it had to be made strong, but with a strong solution trouble would come. The objects would have spots and blotches showing through the nickel plate after the plating, causing the buffing to be extremely hard and the nickel plate brittle. Believing that the fault was with the "cleaner," I analyzed my solutions and found them to be correct. I also scoured some pieces and plated them in the same tank with the electro-cleaned plates, and the scoured pieces on removal from the nickel tanks appeared evenly colored—no spots or blotches, and buffed easily, double evidence that not the nickel solution but the electric cleaner was at fault.

We "country" platers are not supposed to know anything—that's what the supply houses think, and we are supposed to blindly follow directions. I believe it is our own Mr. Emerson who said, "The American people are more apt to believe that they do not understand than any other race." I suppose that is why we have so many "cleaners," all containing about the same ingredients, but having a different trade-name, so that we should not understand but simply have to "believe."

The main object for the formation and successful progress of the American Electroplaters' Society was not simply to believe but to know the why of things, and every member of this Society is, or should be, at work with this object in view—to break the barriers that surround with secrecy the substances used in electroplating—substances and chemicals having a trade-name. Unless the firm marketing a particular trade-named product is willing to give the

chemical formula, it should be considered as evidence that the same is a fraud.

As further evidence that the average trade-named cleaner contains unnecessary, and in some cases, detrimental and inert substances is in the fact that the reverse current is in many instances recommended and used. Believing that the use of a reversed current in eletrolytic work is based on the wrong conception of the function of electricity in electrolysis, I set to work to find the reason why the reverse current is resorted to by some platers in electric cleaning.

Becoming unsatisfied with the high cost of ready-made cleaners, giving unsatisfactory results, I prepared an electric cleaning compound costing about 84c per hundred gallons to make up, consisting of only two substances, but both active. I have no sediment in my tank as is the case with so many trade-named cleaners, and for that reason it is not necessary to make a new solution every six weeks. I have used this cleaner about nine months at a cost of about 60c per month, and do not have to use the reverse current. In the ready prepared, trade-named cleaners, the reverse current is used for the reason that they contain substances which are not entirely dissociated—not in thorough chemical combination, causing a film deposit on the cathodes, and when the current is reversed, this oxide film is dissolved. By reversing the current you reverse the natural order of things. The proper procedure of electric cleaning is based on the same laws governing electrolysis as in electro-plating, with this difference, that no deposition of a metal should form, and should be conducted in the same manner, but when you have to resort to changes of natural laws governing electrolysis—reversing the current—make up your mind that it is due to the fact that your electrolyte, the cleaner, is at fault, because it should contain nothing but active cleaning substances, and with the mechanical aid of the current, no oxide film will be found on your cathodes, and no reverse current is necessary.

I have nothing to sell, this article is written with this object in view, to tear away the veil of secrecy that hides the mysteries of trade-named electric cleaners and other substances of unknown composition that mystify and darken the paths of the progressive plater. I have written quite a number of dealers who sell "cleaners" asking them to give me the formula of its contents, and in every instance but one their reply was, "To give you the formula of our cleaner would be giving our secrets away and injure our business." Further proof that they are poor business men—for they fail to realize that the success of a marketable merchandise today depends on the merits of that article, and not on the secrecy in the making of it! and these are our "amen corner" friends, who proclaim their love and friendship for us so loudly at our meetings and in trade journals. I believe it was Shakespeare who gave the epitaph to woman, "Vanity, vanity, is thy name." Were he living today and followed the noble profession of electro-plating, he would say to men, "Hypocrites, hypocrites, hypocrisy is thy name." The Electric

Smelting & Aluminum Company were the only people who would give the formula and composition of the cleaner they sell.

In experimenting with electric cleaners, I found the following to give excellent results, at a cost of less than ½c per gallon of solution: To boiling water add an equal amount of sodium carbonate and slaked lime—about four ounces of each; this is based on the following reactions: $Na_2 CO_3 + Ca(OH)_2$—2 Na OH+ Ca CO. The lime, or calcium carbonate, being insoluble, is precipitated, forming sodium hydroxide in solution. Most of the trade-named electric cleaners, which give a precipitate, contains these two substances, and others also—silicates of sodium and aluminioum, and the reason they insist on using it boiling hot is that heat is an aid to proper reaction.

You are paying from 3½c to 6½c a pound for an electric cleaner, which every plater can make at a cost of from five to six hundred per cent less. I do not like precipitates in any of my electrolytic operations, and the cleaner I now use is made up of two ounces of Na_2 OH and four ounces of Na CO_3 to a gallon of water. In this combination I have no sediment, and in the nine months I have used it, I have had only two or three pieces to peel—and add about two and four ounces each every other day.

ELECTRO-PLATING OF DIE CASTINGS.

By F. Wadsworth, Cleveland Branch.

Die castings should not be laid aside for any length of time after the polishing and buffing operations, as they coat over with an oxide, which if not removed may cause blistering and peeling. It also makes them difficult to buff.

Strong alkali solutions of caustic soda or potassium should never be used, as they have a reducing action upon the metal, causing an oxide to form, thus destroying the polished surface.

A solution containing:

Soda ash	12 ozs. to 1 lb.
Sodium cyanide	1 oz.
Water	1 gal.

may be used giving excellent results. The cleaner should be used at a temperature of 140° to 150° Fahr., as heat expands the metal causing blubbering, which resemble blisters and spoil the finished article.

Articles should remain in the alkali for a few seconds, then scrubbed to remove the polishing and buffing material.

They are now rinsed in clean water, free from acid and alkali, then passed through a cyanide dip, containing from six to eight ounces of cyanide of sodium to the gallon. After scrubbing with Vienna lime, containing a small amount of cyanide, and rinsing in clean water, they are ready for plating.

Nickle Plating.

Articles with a background should be coated over with copper before going into the nickel bath. Plain articles may be run direct in the following solution:

Double nickel sulphate	8 oz.

Sodium chloride ..... 1 oz.
Magnesium sulphate ..... 3 oz.
Water ..... 2 gal.

This solution should be neutral to the test of red and blue litmus paper. Use caustic soda or potassium to neutralize. Voltage varies from one to three volts, depending upon the class of work.

A substantial plate may be gotten in fifteen to thirty minutes.

Copper Plating.

After loading tank with work, use from three to four volts of current until polished surfaces are coated over, then reduce current back to 1 to 1½ volts in the following solution:

Copper cyanide ..... 3½ oz.
Sodium cyanide ..... 4 oz.
Soda ash ..... 1 oz.
Hyposulphite of soda ..... ½ oz.
Water ..... 1 gal.

This solution may be run warm in about 90° F. It also runs brighter and relieves much better on oxidized work than the old carbonate of copper solution.

Use as little free cyanide as possible in connection with low current to overcome blistering at time of plating or at a later date.

Brass Plating.

Add a solution of:

Zinc cyanide ..... 1 oz.
Sodium cyanide ..... 1 oz.

to the previous copper solution, and follow the same tactics.

Gold Plating.

Articles should have a substantial brass plate before gilding in the following solution:

Sodium cyanide ..... 3 oz.
Gold chloride ..... 6 pwt.
Phosphate of soda ..... 3 oz.
Water ..... 1 gal.

This solution may be used at temperature of 140° Fahr.

Silver Plating.

Articles should be coated with copper for about ten minutes, then rinsed, and amalgamated in mercury dip containing:

Oxide of mercury ..... ¼ oz.
Sodium cyanide ..... 6 oz.
Water ..... 1 gal.

From this dip rinse and pass into silver strike for a few seconds containing:

Sodium cyanide ..... 6 oz.
Silver chloride ..... ½ oz.
Water ..... 1 gal.

Articles may be run direct from striking solution into the following silver solution:

Sodium cyanide ..... 3 oz.
Silver chloride ..... 3 oz.
Water ..... 1 gal.

Antique finishes may be applied to die casting by the various staining agents after plating.

"RUSH THEM OUT."

By Horace Achin, Providence Branch.

In reading over the Review I recalled an incident which happened to me several years ago, and which will probably be of interest to the members of our Society.

The firm I was employed by conceived the idea of manufacturing silver shell bracelets, which were in great demand at that time. The same were made of silver tubing, drawn over brass wire, and then made into links, curbed and chased. In order to market that article as sterling silver the brass had to be extracted from the link, without injuring the silver. Having come to a decision on that matter, my employer advised me of it, and asked me if I could do the extracting. I answered that if such a thing was possible I saw no reason why I could not accomplish it, but that I must have a chance to experiment on them. I may ruin a gross or so of those bracelets, but I'll do it in the end.

He didn't take very kindly to the idea of destroying a gross for experience, and advised me not to try more than a dozen at a time.

The making of that bracelet was begun at once, and everything went along smoothly until it was finished, and ready to extract the brass.

In the meantime I had done some experimenting on my own hook. I knew that nitric acid would dissolve brass, but it would also dissolve silver. I also knew that muriatic, as well as sulphuric, were good helpers but poor dissolvers when used alone.

Having tried several mixtures, I concluded that two (2) parts of nitric acid and three (3) parts of muratic acid would give me the best results. I also decided to use that mixture hot in order to hasten its action. I had hardly come to that point when, one morning, the proprietor, foreman and salesman appeared in the plating room with a quantity of those famous bracelets and a twelve-inch smile on their faces.

"Well, Horace, are you ready to do your end of the work?" was the first remark that greeted me. "Sure thing," I answered, "bring them along." I was questioned as to the manner I was to accomplish the job, but I didn't care to put them wise. Never mind, as long as the work is done that ought to be sufficient.

I failed to mention that two small holes had been drilled in those links where they closed on each other, so that the acid could get at them and at the same time in a place where the holes didn't show.

I turned on the steam to heat the acid mixture and in a short while everything was ready for the operation.

The bracelets were strung on a silver wire, a dozen together, and with the three looking on, I immersed them slightly in the acid mixture. On first contact fumes began to appear, the mixture boiled up terribly and the bracelets turned an elegant black color.

My spectators were horrified. They hastened to tell me that I was on the wrong track. I put up a bold front, told them I knew my business, immersed the whole dozen of bracelets in the acids and left them hanging there, with fumes coming up thicker than hades,

and the whole combination boiling like fury. "Here goes nothing," says I to myself, going on with my other work, as if nothing was happening. While I worked on I took quick and successive glances at the acid jar and also I heard the proprietor remark to the foreman that those bracelets were as good as lost, and he feared the job was too much for the plater.

After waiting a while they asked me how long I intended to leave them in the acids. "As long as you see that boiling going on," I answered. They glanced at each other, and with a dejected look on their faces, walked away. No doubt they thought nothing would be left when the boiling ceased. I admit that I also shared their opinion.

At last I noticed the boiling had ceased. With perspiration streaming down my face and feeling as weak as if my last hour had come, I walked over to the jar, grabbed the silver wire. At that moment I would have given the bracelets and my job also for a buffalo nickel. No weight was felt on the end of the wire. Nevertheless, I pulled it out. Imagine my surprise to see every bracelet complete, as light as a feather, and as black as coal. Eureka! I exclaimed. On rubbing them I noticed that the black color was only an oxide, readily washing off in the ammonia wash and, still better, in pure ammonia they came out an elegant white. Having finished them, I walked over to the office with my chest out (I found the three in consultation, "probably over my funeral") and presenting the bracelets to the proprietor, I remarked, "How does that suit you?"

Imagine his surprise when he saw them all in fine condition, not one ruined. I was praised and patted on the back. They did everything but raise my wages. For a long while all went well. The bracelets sold well and I never ruined any. I had struck the right mixture.

One day that we had worked a little more than usual, the foreman came in the plating room at twenty minutes past five p. m., with two dozen bracelets to finish for that evening.

"Rush them out," he said. "It can't be done," I answered, "I have just the right mixture and it takes forty-five minutes to clean them out." I could not repeat his answer word for word but I remember it was about taking chances and trying things to succeed in life. He wanted them rushed, that was the end of it.

"All right," I answered, "I'll rush them."

The mixture was mixed to react faster and the bracelets immersed. In the meantime more work was brought in to be rushed also and I forgot about the bracelets. "Are the bracelets finished?" asked the foreman, appearing about fifteen minutes of six. "Finished!" I exclaimed, "come and look at them." What a sight greeted use. When I pulled them out the links were dissolved to about the size of a hair. I was boiling with rage. "This is what you get for rushing things," was all I said, not daring to trust myself too much in that condition.

He walked away, but no more was said untli the next day, when

the proprietor came to me with a smile and said: "Say, Horace, what did you do with those bracelets last night?"

"I tried new things, took chances, rushed them out, and that's the result," I answered.

"Well, I admit the results were not very satisfactory, and in the future use your own judgment and don't rush things any more than it is safe to."

Ever since I have worked for results, and rushing has been a secondary affair with me. My advice to my colleagues is: Do your work right and don't rush it out.

THE PUTITOFFS.

My friend, you have heard of the Town of Yawn,
On the banks of the River Slow,
Where blooms the waitawhile flower fair,
Where the sometimeorother scents the air,
And the soft goeasies grow?

It lies in the Valley of Whatstheuse,
In the Province of Leterslide;
That tired feeling is native there,
It's the home of the listless Idontcare,
Where the Putitoffs abide.

The Putitoffs smile when asked to work,
And say they will do it tomorrow;
And so they delay from day unto day,
Till Death cycles up and takes them away—
And their families beg, steal, or borrow.

ONCE-OVERS.

When looking for faults in any person, we never spare time nor trouble, but when we are looking for good, we often glance at the surface, and if we do not see what we seek we make no further effort.

Why not reverse the action?

The majority of people have something good about them. Would it not be better to dig around a little harder to find out the good qualities?

And why talk so much about the frailties of those with whom we come in contact? Would it not be more manly to look until we find the good?

There is plenty of badness in this world, and much of it is scattered all around by those who try to add to its density. It were far beter to offset evil reports by the good deeds and the noble impulse which we could unearth if we tried hard enough.

The words of an old colored woman contained good advice when she said, "I ain't tellin' nuthin' 'bout nobuddy unless it is somethin' good for everybuddy to hear." That's it. Tell something good about everybody or else keep your mouth shut.

WHAT THE BRANCHES ARE DOING

SYRACUSE.

Secretary, W. P. Mann'ng, Jervis House, Syracuse, N. Y.

We are now on a solid basis. We registered as a class in chemistry at the Syracuse Technical School Laboratory, and Prof. Fowler, chemist, is our instructor. We also have with us Mr. Emil G. Nordblom, plater and chemist, formerly of Toronto Branch, and who has helped us to organize and in other ways; also Mr. A. F. Norgren and Wm. Liddy, who started and helped organize. We also had as visitors Mr. Clark of the Manning Loeb Co., Mattewan, N. Y., who told us of what he saw and knew about the art around in his travels, and offered some good suggestions. Also we had as a visitor and advisor and cheerful talker, Mr. Stofer of the Egyptian Lacquer Co.

We attend class Wednesday and Friday evenings. Our regular meeting in future will be first Sunday of each month at Y. M. C. A. building, 8 p. m.

CLEVELAND.

The Cleveland Branch meets every second and last Saturday of the month at 1344 East Prospect Street.

Secretary, W. D. Scott, 4110 Denison Avenue, Cleveland, O.

Cleveland Branch regrets the loss of Mr. Werft, who while secretary of our Branch performed his duties faithfully. He resigned on account of other business taking up his time. He carries with him the best wishes of the members for his success. I would state our Branch is doing good work in the laboratory. We are making test on nickle solutions and mean to go further along these lines. We meet on the second and last Saturday of each month; the second Saturday for laboratory work and the last Saturday for regular business.

CHICAGO.

Meets fourth Saturday of each month, 8 p. m., Western Building, Randolph Street and Michigan Avenue. Secretary, Oscar E. Servis, 5305 Warner Ave.

Meeting called to order, President J. P. Manz presiding.

The banquet committee reported all arrangements had been attended to for January 13th.

Mr. J. De Grazio presented a paper on "Plating of Aluminum," and we compliment him on his first efforts. Keep it up, Jerry.

Mr. De Grazio's paper was listened to with great interest by the members of Chicago Branch, who fully appreciate this addition to their knowledge on this subject.

The discussion which followed failed to establish whether first making the aluminum article to be plated the anode causes it to become passive, simply throws the oxide from the surface, or whether the successful result is due to other causes.

Mr. Liscomb doubted the value of using the aluminum article as a cathode in order to clean it, and mentioned as an illustration of his point the violent action of a battery cell containing aluminum. He thought hydro-fluoric acid, also chloride of iron, might be used to advantage. He also told us of some nickeled aluminum pieces which were plated years ago in Cleveland by first coating with acid copper.

Mr. Willmore said that Prof. Watts had plated aluminum by first coating it with black nickel, and that a well known company north of Chicago is plating aluminum as a commercial proposition.

Mr. Hall told of aluminum plated with nickel that had come under his observation, it being apparently good but peeled in six months.

Mr. Nelson thought that a double throw switch would be valuable in doing this kind of work.

Mr. Hay suggested a coating of zinc.

The only thing agreed upon was that very little of the metal called aluminum was really the "Simon pure" article.

DETROIT.

Meets first Tuesday of each month at 26 East Congress Street. Secretary, B. E. Miller, 543 Townsend Avenue, Detroit, Mich.

The regular meeting of December 1st was called to order with Vice-President E. Woodmansee in the chair. For the good of those Society H. Hawkins read a paper on the "Care of Anodes in Nickle Plating." A lively discussion was had upon this subject and after all arguments were presented a vote was taken and was found that a big majority were in favor of cleaning the nickle anodes.

The subject of running a flouride nickle solution was brought up but owing to the scarcity of platers using this kind of a solution, this subject. However, the laboratory class has decided to experiment with this solution just as soon as they get their plating dynamo installed.

ST. LOUIS.

Meets third Saturday of each month at Public Library Assembly Rooms. Secretary, F. C. Rushton, 4405 Blair Avenue, St. Louis, Mo.

The regular monthly meeting of the St. Louis Branch was held November, the 19th. Among the matters discussed were the St. Louis 191 convention and the annual banquet, which will be held sometime in January, 1917. Messrs. Musick, Lamkemeyer and Duebelbeis were appointed as a committee on arrangements for the banquet. Frank Rushton was appointed to represent the St. Louis Branch on the Bureau of Education.

The rest of the evening was spent in an interesting discussion on "What Is a Good Non-Conductor to Use on Plating Racks?" What advantage, if any, is there in the use of magnesium sulphate in a nickle solution.

TORONTO.

Meets fourth Tuesday of each month at Occident Hall, Bathurst and Queen Streets. Secretary, Ernest Coles, P. O. Box 5, Coleman P. O., Toronto, Ont.

The regular meeting of Toronto Branch was held on Thursday, November 23rd, President Salmon presiding over a fair attendance. Discussions were held on Nickel Plating, Hot Silver Solution, etc., and proved to be most interesting. One feature of the nickel discussion which proved to be very open for discussion was What Constitutes a Soft Nickel Plate? For our next meeting we are to have a paper on boracic acid in nickel solutions and we are living in expectance.

INDIANAPOLIS.

Indianapolis Branch meets second Saturday in month at Hotel Denison. Secretary, L. Mertz, 1725 Union Street.

Indianapolis Branch held its regular meeting December 9th, and was presided over by L. Mertz.

One active member and one honorary member was elected.

It was decided that the secretary have order of business printed in small sheet form to pass out with each constitution book.

Discussion arises as to brightener for cyanide copper bath. The best results seemed to be obtained with hypo-sulphite of soda, 1 to 1½ oz. per gal.

Motion carried that we make it a special matter of business to bring up and discuss spotting out of cyanide solutions and where possible bring samples of spotted work at our next regular meeting.

All bills were allowed.

PHILADELPHIA.

Meets first Friday of each month in the Harrison Laboratory Building, University of Pennsylvania, 34th and Spruce Streets Secretary, Philip Uhl, 2432 North 29th Street, Philadelphia.

The regular monthly meeting of the Branch was held Friday evening, December 31st.

After the regular routine of business had been disposed of, the papers on "Black Nickel" and "Matt Finish on Cold Rolled Steel," sent us by the New York laboratory committee, were discussed at length. These papers are being typewritten and each member will receive a copy of same, and will be discussed further at the next meeting.

Best wishes for a merry Christmas and a prosperous New Year.

Mr. George Karl of the Zapon Lacquer Company was present and made a few remarks.

PROVIDENCE.

Meets second and fourth Wednesday of each month at No. 60 Weybosset Street. Secretary, Albert J. Lemrise, 124 Waverly Street, Providence, R. I.

The Providence Branch held their two last regular meetings in their new rooms, located at No. 26 Custom House St., room 16.

A laboratory has been fitted out and classes in chemistry and mathematics organized, meeting every Monday and Wednesday evenings.

Mr. Albert W. Claflin, secretary of the wholesale house, Geo. L. Claflin & Co., who has taken much interest in our Branch to the extent of furnishing all the necessary chemicals and apparatus, has accepted the honorary presidency of our Branch and will meet the members at our next meeting.

Votes of thanks have been extended to the Messrs. Tyndall, Andrews, McDonough and O'Brien for their good work in the acquisition of our new rooms.

Several new members have been received and we look for many more members in 1917.

Considering the large number of platers working evenings, the meetings are well attended, and much interest is shown in the good work our Branch is doing at the present time.

BRIDGEPORT.

Meets third Friday of each month at the office of the Brass World, 260 John Street, Bridgeport, Conn. Secretary, Nelson Barnard, 858 Howard Ave., Bridgeport, Conn.

TOLEDO.

Meets the last Tuesday of each month at Toledo University. Secretary, James E. Nagle, 209 Navarre Ave., Toledo, Ohio.

ROCHESTER.

Meets second and fourth Friday of each month at University of Rochester. Secretary, C. V. Haring, 186 Driving Park Avenue, Rochester, N. Y.

NEWARK.

Meets first and third Friday of each month, 8 p. m., 47 Bank Street, Newark, N. J. Secretary, Geo. Reuter, Jr., 28 S. 17th St., East Orange, N. J.

DAYTON.

Meets first Wednesday of each month at the Y. M. C. A., Dayton, Ohio, Secretary, Alphonz Lamoureux, 432 E. Second St.

MILWAUKEE.

Meets first Tuesday of each month at West Side Bank Building, Third and Chestnut Streets. Secretary, E. C. Yaeger, 962 Ninth Street, Milwaukee, Wis.

CINCINNATI.

Meets on the first Friday of each month at 218 East Second Street. Secretary, F. H. Nordmann, 720 Froom Avenue, Cincinnati, Ohio.

NEW YORK.

Meets second and fourth Fridays of each month at 32 Union Square. Secretary, Wm. Fischer, 300 St. Anns Ave.

APPLICATIONS FOR MEMBERSHIP.

NEW YORK.

Joseph Haas ..... 380 E. 158th St., New York City
Ralph S. Howe ..... 149 W. 93rd St., New York City
Geo. P. Kail ..... 200 5th Ave., New York City

ST. LOUIS.

Arthur Grinham ..... Formerly of Sydney, Australia

CHICAGO.

Max Shipera ..... 1452 N. Tallman Ave., Chicago, Ill.

NEWARK.

Thomas H. Tate ..... c-o Herr-Schofield Co., Baltimore
Irving C. Smith ..... 16 Cedar Ave., Montclair, N. J.

TORONTO.

Wm. Bottrell ..... 22 Baltic Ave., Toronto, Ont.

CINCINNATI.

Wm. Lusing ..... 741 Circle Ave., Winton Place, O.

CLEVELAND BRANCH.

Martin Seedorf ..... 1836 East 20th St., Cleveland, O.

CHANGE OF ADDRESS.

Lewis Taylor ..... 736 60th St., Brooklyn, N. Y.
A. P. Williams ..... 363 Crescent St., Waltham, Mass.

ELECTED TO MEMBERSHIP.

PHILADELPHIA.

Charles M. Moore ..... 971 Wayne Ave., York City, Pa.
Albert E. Shugard ..... 1031 E. Palmer St., Philadelphia, Pa.
David H. Wiley ..... 4286 Griscom St., Philadelphia, Pa.

CHICAGO.

Leo Pflug ..... 1656 Ballou St., Chicago, Ill.
Wm. Esbach ..... 1642 Warner Ave., Chicago, Ill.
Gus Hilger ..... 603 S. Monroe St., Streator, Ill.
Chas. B. Wilmore ..... 5909 5th Boulevard, Chicago, Ill.

TORONTO.

Chas. Kemish ..... 271 Boston Ave., Toronto, Ont.

INDIANAPOLIS.

James McDermot ..... 1306 W. 29th St., Indianapolis, Ind.
C. A. Ormsby ..... 806 Odd Fellows' Bldg., Indianapolis, Ind.
Carl Comer ..... Electro-Type Foundry, Indianapolis, nId.
Chas. A. Ormsby ..... 806 Odd Fellows' Bldg., Indianapolis, Ind.

PROVIDENCE.

Milton Lord ..... 10 Coyle Ave., Providence, R. I.
Geo. C. Johnson ..... 14 Blount St., Providence, R. I.

LRBM-'17